ASSESSMENT OF THE STATUS OF WATER, SANITATION AND HYGIENE IN T/A CHIMALIRO, THYOLO DISTRICT.

DANIEL CHIMOTA

(WQM/010/18)

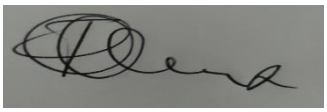
THYOLO, MALAWI.

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October, 2022

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DECLARATION

I DANIEL CHIMOTA declare that this research project represents my work and that it has never been submitted to this institution or any other institution for any academic purpose. All sources of information have been appropriately acknowledged.

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ABSTRACT

This study was carried out in T/A Chimaliro, Thyolo district, Malawi to assess the status of water, sanitation and hygiene practices among randomly selected households. A total of 73 households were selected and semi structured questionnaire was used to collect data. Information obtained from this study revealed that 51.43% households get their water from open dug wells, followed by 21.43% who fetched water from borehole and river and 5.71% obtained water from tap. It also noted that 56.1% treated their water before drinking and 43.9 % who did not treat. Among those that treated their water 72.41% filter the water using a cloth, 24.14.0% boiled their water and 3.45% use chlorine for water treatment. 94.5 % had household's latrines, 5.5% had no toilet or practiced open or bush defecation. Among those that had toilets, 69.6% of the toilets did not have covers and 30.4% contained covers. Results also showed that 27% of the households had garbage bins and 63% of the households had no garbage bins. 50% of the households used buried as the method of waste disposal, followed by collection 33.33% and 16.67% of burning of the waste. While 72.6% respondents practiced hand washing, 27.4% did not wash their hands after using the toilet and among those who wash hands, 39% respondents said they wash their hands with a soap sometimes, 7% always wash their hands with soap, 25% they do not wash with soap and 2% they do not know washing hands with soap. 48.08% respondents said that they did not have enough water because of shortage of water supply in the community, followed by 36.54% which said water became scarce due to drought and another 15.38% saying it was due to frequently breakdown of the water facilities.

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CHAPTER 1: INTRODUCTION

1.1 Background

Universal access to water supply, sanitation and hygiene practice is essential for human health wellbeing and social-economic development (Behnke, et al., 2018) at all levels. According to the United Nations Resolution 64/292: "The human right to water entitles everyone supposed to have sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses (Shaheed, Orgill, Montgomery, Jeuland, & Brownd, 2014) in order to achieve sustainable development goals number 6 target 1; for universal and equitable access to basic WASH services by 2030 and improvements in levels of service. Globally, majority of people are able to access basic improved WASH services but there is still uneven distributions of these services across the global and this remain a great challenge to achieve sustainable development goal targets. In developing countries, there is a large number of people who are not able access improved and sufficient water supply, sanitary facilities and proper hygiene practices as compared to developed countries. The global statistics shows that, 785 million people do not have access to basic water service, 1.1 billion do not have access to basic sanitation and 3 billion people lack adequate facilities to safely wash their hands at home (UNICEF, 2020).

The accessibility remains a major challenge in rural areas of developing countries. According to Sophie et al. (2016) and Chen et al (2020), availability of the WASH services is very critical prevention of WASH related disease outbreaks (Donde, Atoni, Muia, & Yillia, 2021). It was estimated that 10% of the global burden of the diseases result from unsafe water, poor sanitation and inadequate of hygiene practices (Schuster-Wallace , Grover , Adeel , Confalonieri , & Elliott , 2008). The poor and unsafe access to WASH plays a key role in transmission of various diseases, such as diarrheal diseases which is estimated that approximately 2,300 people die every day from diarrheal diseases.

Water supply and sanitation directly affect the health and food security, and they are critical component in fights against hunger and food and malnutrition (ACF, 2005). It has been noted that about 50% children are under nutrition because of the poor WASH practices (World Bank., 2008).

In this research present study which was carried out to assess of the status of water, sanitation and hygiene practice (WASH) in T/A Chimaliro community in Thyolo district, Malawi.

1.2 Problem statement

Inadequate WASH services have health and socio-economic consequences. This compromises the achievement of the sustainable development goal, (SDG) 6, aiming at achieving universal and equitable to basic WASH services by 2030 (United Nations General Assembly, 2015). The latest global estimates show that 785 million do not access to improved drinking water, 2 billion do have not access to basic sanitation and about 3 billion people worldwide lack adequate facilities to safely wash their hands at home (Gobal Health Council, 2021). This poses a threat to people at global and national level in terms of WASH related diseases. These challenges exist in Malawi because large proportion of the population lack basic WASH services specifically in rural settings.

This is evidenced with frequent outbreaks of WASH related diseases in many parts of the country including T/A Chimaliro area. In case of Thyolo, 21% of population consuming water from unprotected water sources (Luka, 2022). The study area is spared as there has also been an increase of WASH related diseases in the area over the years. However, no documented study has been to assess the status of WASH in the area in order to come up with good interventions to improve the status of WASH activities in the area. Therefore, this study seeks to assess the status the water, sanitation and hygiene in the study area.

1.3 Main objective

- To assess status of water supply, sanitation and hygiene practices (WASH) in rural households in T/A Chimaliro village, Thyolo district, Malawi.

Specific objectives

- To determine availability of WASH facilities in study rural area
- To investigate the accessibility to WASH services in the community
- To explore the challenges households face to access WASH services

1.4 Research questions

- ✓ What is the main source of the water for a household?
- ✓ How long does it take to travel to the water point source to draw water?
- ✓ What is the distance of your water sources?
- ✓ Is the water always available from your water sources?
- ✓ Do you treat your water to make it safe for drinking
- ✓ Do you have toilets for defecation?
- ✓ What are the conditions of the toilet? (Have a roof, lids to cover the hole)
- ✓ Do you have a hand washing facility for your households?
- ✓ Do you have specific soap for hand washing?
- ✓ When do you likely to wash your hands?
- ✓ Do you have garbage bins for waste disposal
- ✓ What methods do you use for solid waste disposal?
- ✓ What are the challenges you are facing concerning water sources?
- ✓ What problems do you likely face on hand washing practices?

1.5 Significance of the study

This research study aimed to assess of the status of the water, sanitation and hygiene practices in T/A Chimaliro, Thyolo district so that better WASH program would be provided in the community in coming years. Furthermore, this study would be very significant for both national and community in providing recommendations and intervention measures that could help improve the program implementation that is beneficial to the department of health. Finally, government and other stakeholders would come up with interventions to help the communities attain WASH status thereby achieving the SDGs goal 6 as they will employ measures to address the challenges revealed from the study findings.

CHAPTER 2: LITERATURE REVIEW

2.1 Water, Sanitation and Hygiene (WASH)

Water, sanitation and hygiene commonly referred as WASH, These three components of WASH are grouped together because are interdependence, one cannot fully realized without other. Improving these three components are essential to reduce environmental health risks for population's well-being at the global level (Wisner & Adams, 2002). However, semi-urban and rural areas face several WASH related challenges. These challenges and hinders to achieve SDG 6 target 1 and target 2 which focus on accessibility to safe and affordable drinking water and accessibility to sanitation and hygiene and no open defecation (UNICEF, 2008). This is the case because WASH sector is less prioritized in low-income countries despite its important to social-economic growth and control measure of the infectious diseases (Roche, Bain, & Cumming, 2017). In 2017, nine out of ten of the 785 million people were still having WASH limited services (WHO/UNICEF, 2017). The problems of WASH lead to increase of morbidity and mortality rate and it largely affects children under 5 age who die over 700 every day due to insufficient of appropriate WASH services (UNICEF, 2020). Malawi is the one of developing country where WASH services have not well improved specifically in rural areas.

2.2 Water

Water refers to the colorless substances that exist in three states of matter, liquid, solid and gas. Water is the vital life source for all living organisms and creatures, which includes plants, animals, microorganisms and humans. The availability of the water on the earth surface cover 70%.It plays a key role in various sectors such health sector, agricultural sector for water irrigations, in industries for operating machines and domestic purposes,

Water accessibility is determined by distance covered, time spent to the sources, improved sources and the quality and quantity of the water collected for domestic purposes (Howard & Bartram, 2003). Achieving universal access to safe and affordable drinking water by 2030 it create a big challenge for all countries, especially in rural settings this because of inadequate water supply, this affects the progress of achievement of SDG 6 target 1 which aims at achieving access and affordable drinking water (UNICEF, 2008). In Malawi, 87% in urban

areas access improved drinking water sources compared to 63% in rural areas households and only 77% of the water points nationwide are functional, the rest are not working because of the old age, catchment deterioration, neglect, lack of the spare parts and inadequate community based water management structures (UNICEF, 2020).Women and child are the burden of this poor services as they walk long distances to fetch water for domestic purposes.

2.3 Sanitation

Sanitation is defined as promoting good health by preventing human contact with the waste. Proper sanitation is beneficial, but the most important one being a healthy functioning society. Globally, more than half of the global population does not have access to safe sanitation and 673 million people still practice open defecation (UNICEF, 2020).In Malawi most of the people they have adequate of basic sanitary facilities such as toilets, bins and those who have, despite that there are not good conditions. For example, water for people found that, 25 % of people in rural area access basic sanitation services while remaining percentage do not access to basic sanitation (Water for People, 2022), this increases the risks that are related for sanitation, such as cholera, dysentery and typhoid which transmitted by agents' insects.

2.4 Hygiene

According to world health organization, hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. It includes such personal habit choices as how frequently to bathe, wash hands, trim fingers and changing the clothes (Bashir, 2019). Proper hygiene has been critical issues in many countries at globally, where most of the people are not practice good hygiene such as hand washing. UNICEF (2020) reports that three billion people in the world do not have access to hand washing facilities with soaps. Hygiene practice is critical component for prevention of infections especially effective hand washing which recommended by WHO as the first line defense of the prevention of transmission both respiratory and diarrheal diseases (Sophie, et al., 2016). Effective hand washing has been a crucial to most developing regions where most people do not practice of hand washing because of poverty and lack of the awareness programs. Likewise large

population of the Malawi especially rural areas they do not have adequate of hand washing facilities for instance, soaps and buckets. This increases the risks of contraction of respiratory and diarrheal diseases.

CHAPTER 3: METHODOLOGY

3.1 Study area

This study was conducted in in T/A Chimaliro village in Thyolo district of Malawi. Thyolo district is located in southern region of Malawi and it borders Mulanje to the east, Blantyre to the north and Nsanje to the south. Total area of the district 1666 km^2 with population density of 448.4/ km^2 and the district has total population of 721456 people (National Stastical Office, 2018). Water resource in Thyolo district is characterized by river, streams, swamps and groundwater aquifers and most of its rivers originate from Mulanje and Thyolo mountains (Kamtukule, 2007). The district has tropical savanna climate which experience three seasons, namely hot-dry, hot-wet and cool-dry seasons. Most people in this district do farming, especially animal rearing such as cattle's, goats and chickens and subsistence farming. The major languages spoken are Chilomwe and Chichewa while all the major ethnic groups share common culture and ancestral heritage.

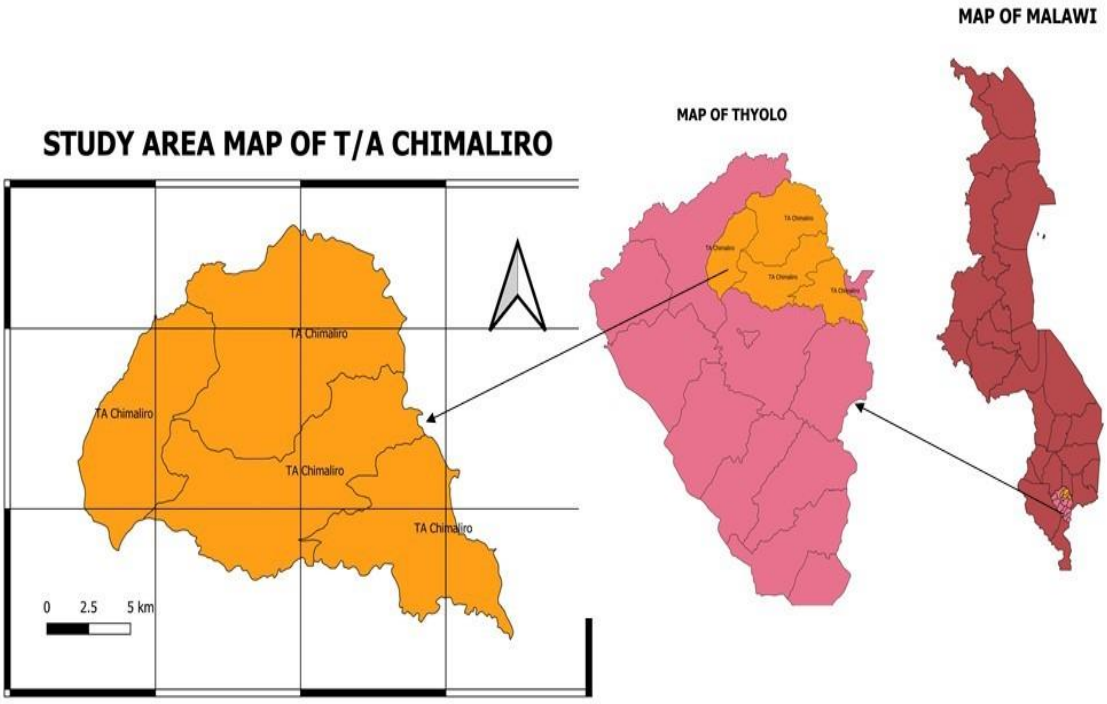


Figure 1.1: Maps of Malawi, Thyolo and T/A Chimaliro

3.2 Research design

This involved the consideration of data collection sampling method and data analysis. The mixed method research was used to conduct the study which combined qualitative and quantitative approach. Data was collected by qualitative approach where semi structured questionnaire were compiled to obtained data through interviews. The questions were compiled in English and translated to Chichewa for easy communication. The obtained qualitative data was quantified and descriptive statistics were used for data analysis.

The following shows flow chart of the research design;

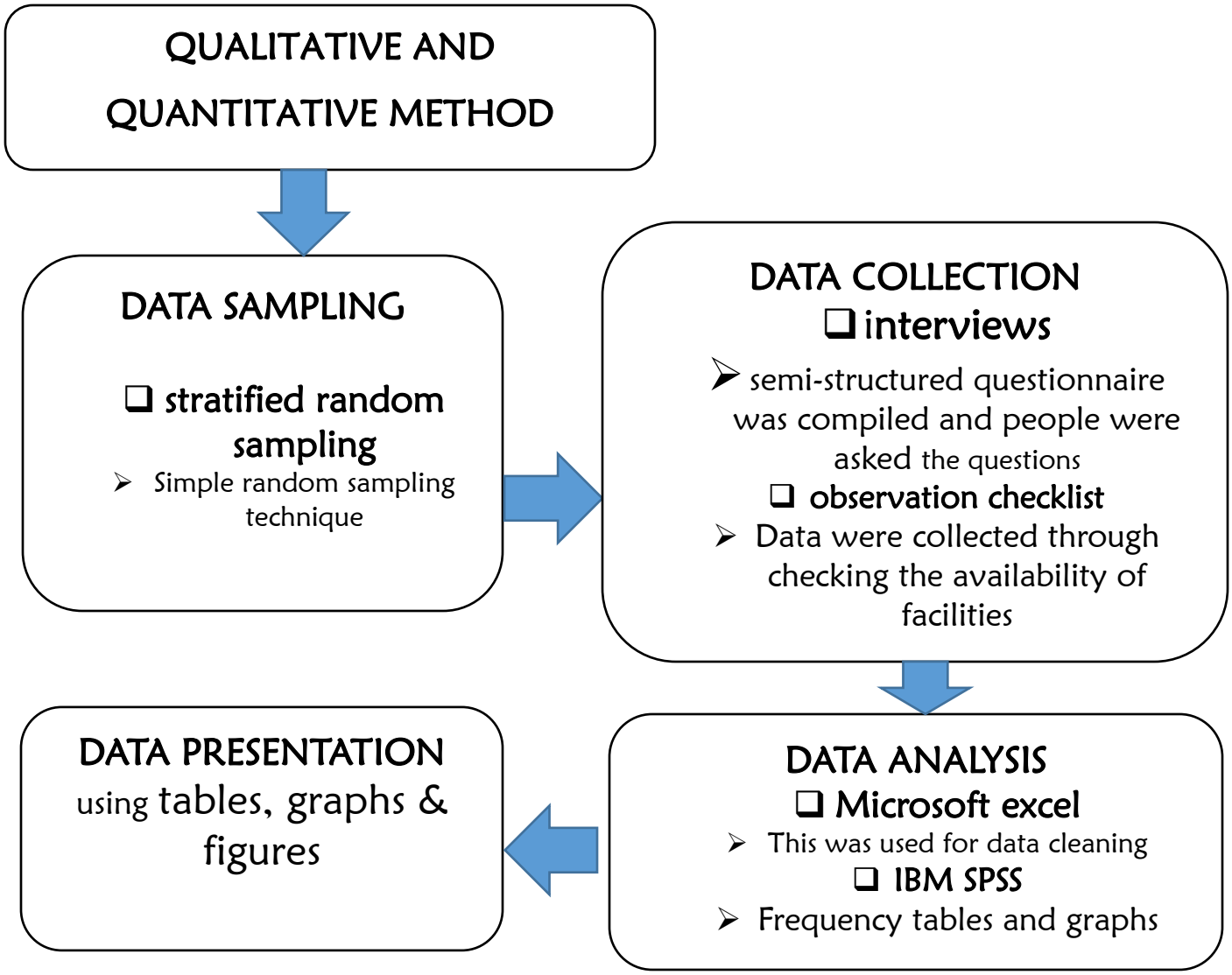


Figure 2.1: Study work flowchart of the research design

3.3 Data sampling

This study used stratified random sampling method. Stratified random sampling is a probability sampling technique in which the total population is divided into homogeneous groups to complete the sampling process (Qualtrics, 2022). The T/A Chimaliro community was divided into four strata based on group village headman. Data was sampled from an estimated 20,000 households and 73 households took part in the interviews. The sample size from the population in the community was determined by using the following formula;

$$\text{Sample size } (n) = N \times \frac{\frac{Z^2 \times P \times (1-P)}{e^2}}{((N-1) + \frac{Z^2 \times P \times (1-P)}{e^2})}$$

Where N = an estimated population

Z = critical value of the normal distribution at the required confidence level

P = Sample proportion

e = margin of the error

N = 20,000, Z = 1.95, marginal error (e) =0.05 P = 0.05 and critical value at 95%

3.4 Data collection

The research study was conducted by using mixed method approach, utilizing both qualitative and quantitative methods. In qualitative method data was collected in non-numerical whereby quantitative method, data was collected in numerical form. A descriptive cross-sectional study was adopted in the study area and a pre-tested, semi-structured questionnaire was used to generate data from the respondents while an observational checklist was used to conduct an assessment of the availability, functionality and use of WASH facilities in the study area. The study primarily focused on assessment of WASH program in rural area of T/A Chimaliro village and gathered key data on all components of WASH that including water supply, sanitation and hygiene practices.

3.4.1 Data collection by using interviews

During the interviews, the data was collected using questionnaire. The well-organized semi-structured questionnaire was compiled for interviewing the villagers for data collection. In terms of water supply, people were asked the sources of water for domestic purposes, the distances covered every individual to fetch water and the methods of water treatment. On sanitation, people were asked the availability of the toilets at their household and the conditions of the toilets. The data of the hand washing practices were also collected by asking the availability and accessibility of hand washing materials. Finally, people were also asked the challenges that came across in accessibility to WASH services.

3.4.2 Observation checklist

During observation checklist, sanitary facilities like toilets, the conditions of the toilets and availability of hand washing facilities were checked at each household.

3.5 Data analysis

The data obtained during the research study was uploaded in Microsoft Excel where data cleaning the data was done and thereafter the Excel document was uploaded in IBM-SPSS Statistics Version 20.0 for data analysis. SPSS software was used to produce frequency and percentage tables and graphs like pie chat and bar graphs.

CHAPTER 4. RESULTS AND DISCUSSION

4.1 Demographics of the respondents

A total of 73 respondents were participated in this research study. From Table 1, 68.5% respondents were female and 31.5% were male.

SEX	FREQUENCY	PERCENTAGE
Female	50	68.5
male	23	31.5
total	73	100

Table 1 shows demographic results

4.2 Availability of WASH services

From the results of the study, figure 4.1 bar graph shows the sources of water supply, the respondents of 51.43% get their water from open dug wells, followed by 21.43% who fetched water from borehole and river and 5.71% obtained water from tap. According to (JMP, 2021) improved water sources include, piped water, boreholes or tube wells, protected dug wells, protected springs, rain water and be must be accessible on premises, available when needed and free from contamination. But 51.43% and 21.43% of the households in T/A Chimaliro get the water from Unimproved water sources include water from an unprotected dug well river, figure 3.1 shows unimproved sources of water.



Figure 3.1 shows unimproved sources of water

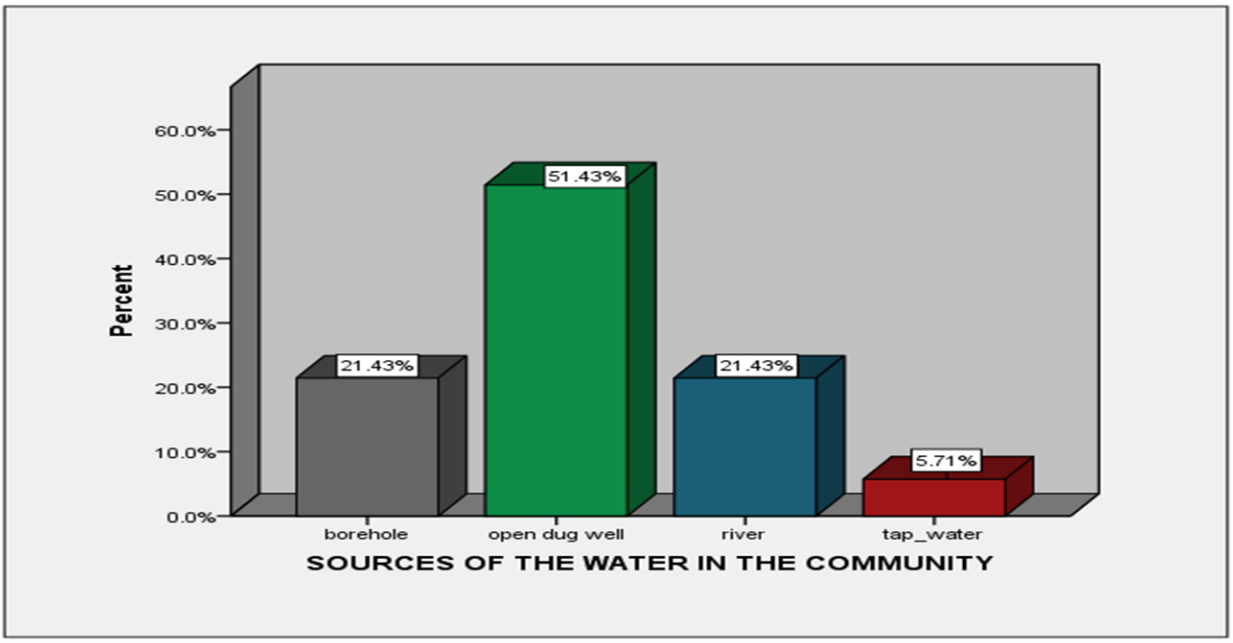


Figure 4.1: Sources of water in the community

According to household water treatment, 56.1% households treat their water before drinking, compared to 43.9 % who did not treat water for drinking. Water treatment helps to remove unwanted contaminants that may resulted to health effects.

Response	Frequency	Percentage
Yes	41	56.1
No	32	43.9
Total	73	100

Table 2: show number of households that are able to treat water

Table 3 showed that 94.5 % had household's latrine, 5.5% had no toilet or practiced open or bush defecation. Toilets are crucial for the healthy development of people since is sanitary facilities of human urine and feces. Based on findings, there is great improvement for availability of the latrines in the community among households but still 5.5% of households' lack of the latrines. Through construction of latrines and sanitation education as part of CLTS will promote improvement of hygiene habits (elimination of open defecation) of the entire population by raising awareness of children about sanitation and hygiene (JICA, 2017).

RESPONSE	FREQUENCY	PERCENTAGE
NO	4	5.5
YES	69	94.5
Total	73	100

Table 3: Availability of the toilets

The table 4, also showed that those they had toilets, 69.6% of the toilets they had no covers and 30.4 had the cover. A good condition of the toilets must have covers to prevent flies to land on food which might transfer the fecal matters. The results revealed that 69.6% household's toilets had no lids /covers, this increases the transmission of diseases.

Response	Frequency	Percentage
Yes	21	30.4
No	48	69.6
Total	69	100

Table 4: Availability of the toilets with the covers

Piles of garbage cattle dug lying around the house provide a breeding ground for flies. The house and its surroundings should be kept clean to avoid the flies responsible for transmission of diseases. **Table 5** showed number of the households they had garbage bins for solid waste disposal, 27% households had garbage bins and of the households had no garbage bins.

Response	Frequency	Percentage
Yes	27	37
No	46	63
Total	73	100

Table 5: Availability of garbage bins for solid wastes disposal

4.3 Accessibility to WASH services

In terms of the distance covered to access water sources, it shows that the maximum distance was 600 meters and minimum was 1 meter and the average distance was 225.757 meters. Table 6: show descriptive statistics for distance covered by households to access to water source.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
DISTANCES COVERED TO WATER SOURCES ACCESSIBILITY	73	1.0	600.0	225.757	186.8759

Table 6: Distance covered to water source

Assessment of method of water treatment indicated 72.41% respondents used filtering method as the water treatment followed by 24.14.0% boiled their water for drinking and 3.45% use chlorine to treat their water.

The bar graph showed the Methods of water treatment

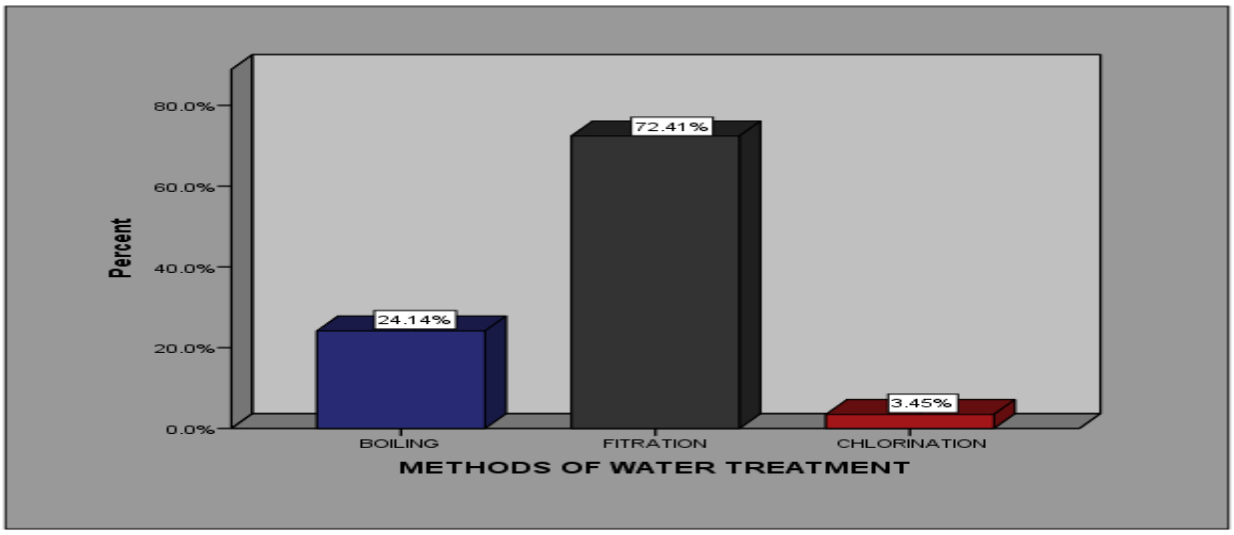


Figure 5.1: Methods of water treatment among households

Table 7 showed 65.2% respondents of their toilets had not good conditions and maintained properly, while 34.8% of the toilets had a good condition and proper maintained. 65.2% of the household's toilets are leaked and wet on the floor because of poor designed.

Response	Frequency	Percentage
Yes	24	34.8
No	45	65.2
Total	69	100

Table 7: Proper usage and maintenance of the toilets

The pie chart showed 50% of the households used buried as the method of waste disposed, followed by collection 33.33% and finally 16.67% of burning of the wastes.

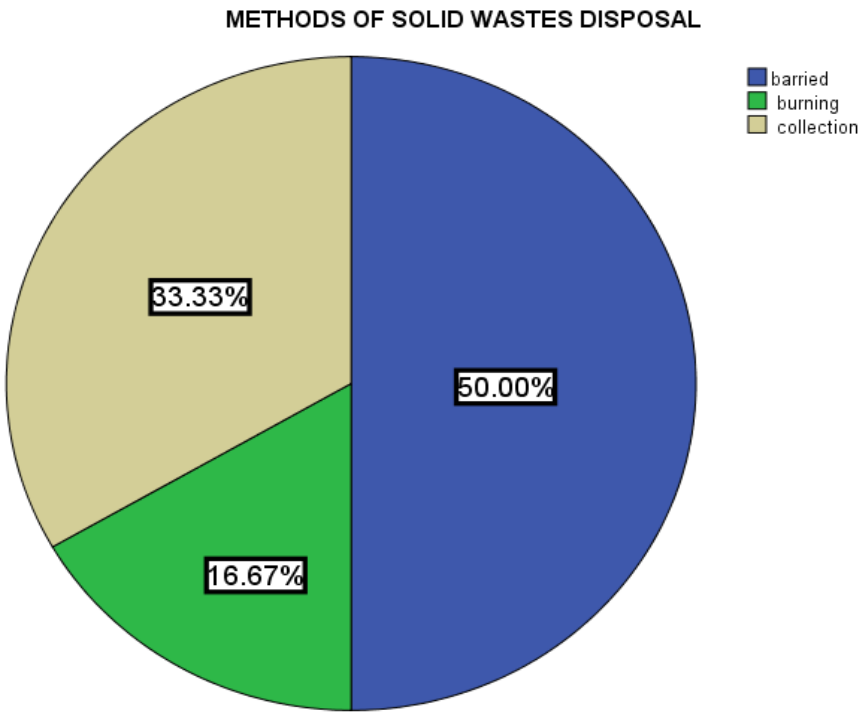


Figure 6.1: The pie chart showing the methods of solid wastes disposal

Regular hand washing is one of the best ways to remove germs and prevent the spread of germs to others. Table 8 showed that 72.6% respondent's practice hand washing, while 27.4% did not wash their hands after defecation.

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	53	72.6	72.6	72.6
Yes	20	27.4	27.4	100.0
Total	**73**	**100.0**	**100.0**	

Table 8: Hand washing practices among the respondents

According to table above, shows great improvement in hand washing practices based on the findings but hand washing with soap is not proper practiced. Table 9 showed, hand washing practices with clean water and soap. 39 % respondents said they washed their hands sometimes, 7% always washed their hands, 25% they do not wash and 2% they do not know washing hands with clean water and soap.

Responses	Frequency	Percent	Valid Percent	Cumulative Percer
Don't know		2	2	2
Always		9	9	12
Never	2	34	34	46
Sometimes	3	53	53	100
Total	**7**	**100**	**100**	

Table 9: Show hand washing practices with soap after defecation

Table 10, showed the results of the hand washing practices with soap after disposal of fecal matter of young children. 45% sometimes they wash their hands, 18% they do not wash their hands, 8% always wash their hands and 2% they do not know wash their hands with a soap after.

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Don't know		2.	2.	2.
Always		11.	11.	13.
Never	1	24.	24.	38.
Sometimes	4	61.	61.	100.
Total	7	100.	100.	

Table 10: Show hand washing with soap after disposal of babies Nappies.

4.4 Challenges in accessibility to WASH services

The figure 6.1, showed that, 48.08% households they do not had enough water because shortage of water supply in the community, followed by 36.54% due water became scarce due to drought and 15.38% due to frequently breakdown of the water supply facilities. Households had the challenges of access to sanitation and hygiene because of financial problems, to buy sanitary facilities like buckets, soaps and to maintain the collapsed the toilets. L.ck of awareness program was another great challenge, they do not know washing their hands proper after defecation and after cleaning babies.

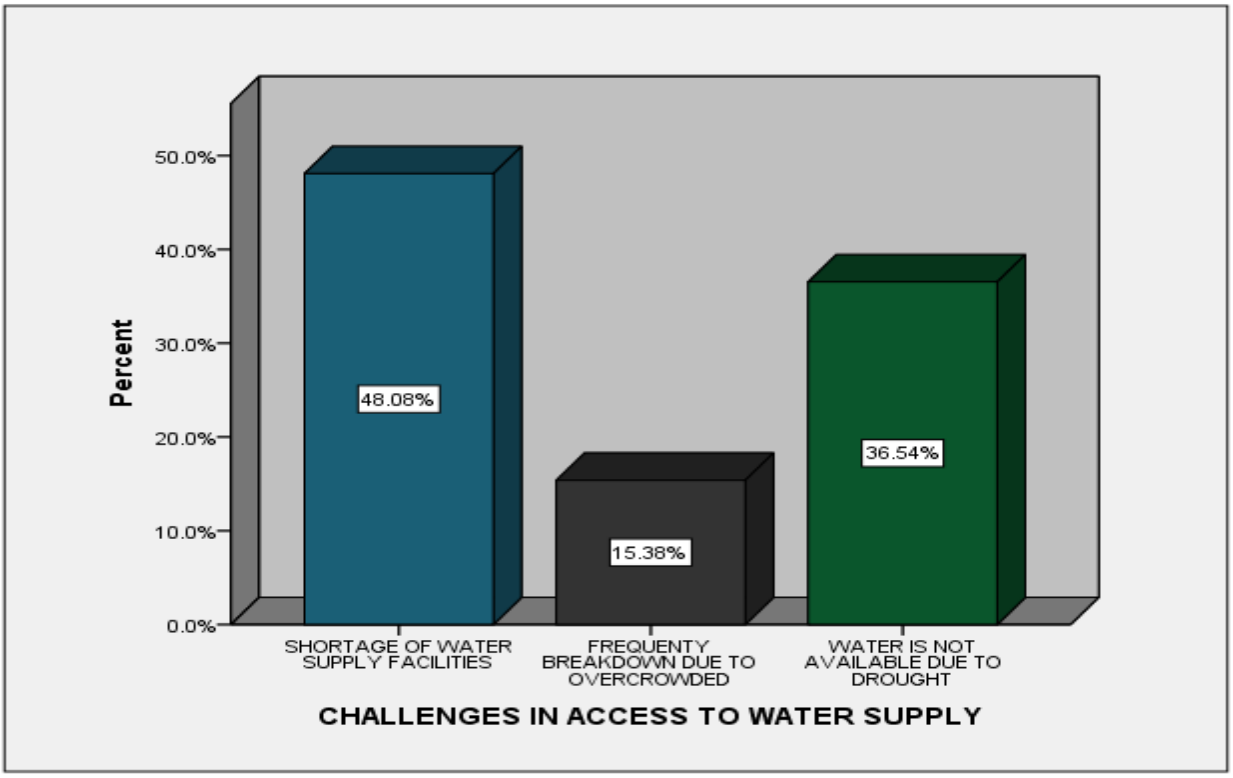


Figure 7.1: Challenges in access to water supply

CHAPTER 5 CONCLUSION AND RECOMMENDATION

This research study aimed to assess of the status of the water, sanitation and hygiene practices in T/A Chimaliro, Thyolo district. However, the delivery and accessibility to WASH services is great challenge in this community, where there is inadequate water supply, most of the use unimproved water sources for domestic purposes, insufficient sanitary services due to lack of sanitary facilities hence practicing open defecation and most of the people in the community they do not practice proper hand washing, these increase the chances of contraction and transmission of water related diseases.

Improving environmental sanitation largely requires adequate availability and accessibility of WASH facilities. Lack of accessibility to WASH facilities increases poverty, disease outbreaks and underdevelopment in any polity. Findings in the current study confirmed a significant lack of access to improved WASH facilities and hand washing practice was poorly reported. It was also observed that the hygiene standard of available WASH facilities was poor. Hence, rural communities should be supported by government and other relevant stakeholders to ensure adequate provision of WASH facilities in their communities. Environmental health officers should routinely engage in monitoring households to ensure that every household has essential WASH facilities with improved hygiene standards. Community stakeholders should work with the government at all level to ensure that a significant number of households in their communities have access to potable water and establish a more acceptable method for solid waste disposal.

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